



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,815	06/27/2003	Larry J. Markoski	09800240-0048	8007
43320	7590	04/11/2006	EXAMINER	
EVAN LAW GROUP LLC 566 WEST ADAMS, SUITE 350 CHICAGO, IL 60661			LEE, CYNTHIA K	
			ART UNIT	PAPER NUMBER
			1745	
DATE MAILED: 04/11/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/608,815	MARKOSKI ET AL.	
	Examiner	Art Unit	
	Cynthia Lee	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1 and 21-44 is/are pending in the application.
- 4a) Of the above claim(s) 1, 20, 26 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-25 and 28-44 is/are rejected.
- 7) ☒ Claim(s) 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/22/2003</u> . | 6) <input checked="" type="checkbox"/> Other: <u>IDS: 2/21/2006</u> . |

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claim 1, drawn to a method of transporting gas, classified in class 252, subclass 372.
- II. Claim 20, drawn to a composition for delivering gas, classified in class 252, subclass 182.11.
- III. Claims 21-44, drawn to a fuel cell, classified in class 429, subclass 46.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the composition can be used by a method that doesn't require an electrode.

Inventions I and III are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the method can be used by a product that is not a fuel cell.

Inventions II and III are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed

Art Unit: 1745

does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination, i.e. the anode and cathode. The subcombination has separate utility such as a fuel cell.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no claims are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims

Art Unit: 1745

are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with Dr. Paul Rauch on 19 Dec 2005 a provisional election was made with traverse to prosecute the invention of Group III species I. During a telephone conversation with Dr. Paul Rauch on 23 March 2006 a provisional election was made with traverse to prosecute the Species of

The electrolyte of claim 24

The fluorinated solvent of claim 29

The surfactant of claim 31.

Affirmation of this election must be made by applicant in replying to this Office action. Claims 1, 20, 26, 27 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim

Art Unit: 1745

remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Full consideration was given to claims 21-25 and 28-44.

Preliminary Amendment

The claims filed 12/22/2005 has been placed in the application file and the information referred to therein has been considered as to the merits.

Information Disclosure Statement

The Information Disclosure Statement (IDS) filed 12/22/2005 and 2/21/2006 has been placed in the application file and the information referred to therein has been considered.

Drawings

The drawings received 6/27/2003 are acceptable for examination purposes.

Claims Analysis

It is noted that the limitation "such that when a first liquid is in contact with the anode, a second liquid is contacted with the cathode, and the first and the second liquids flow through the channel, laminar flow is established in the first and the second liquids" in claim 41 was considered but not given patentable weight because it has been held by the courts that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (BdPatApp & Inter 1987). See MPEP 2115.

Claim Objections

Art Unit: 1745

The limitation "at most 10" in claim 25 should recite "at least 10."

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 21-25 and 28-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear how a "composition" can contact with at least one of the anode and the cathode.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 21-25 and 28-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohlsen (US 2004/0058217) in view of Brokman (US 5185218), and DuPont Zonyl® FS-62 technical data sheet (3/2001) (hereinafter referred to as "Zonyl® FS-62").

Ohlsen discloses fuel cell system having internal multistream laminar flow. Ohlsen discloses a liquid fuel/electrolyte mixture and a liquid oxidant/electrolyte mixture. The liquid fuel/electrolyte mixture and a liquid oxidant/electrolyte mixture comprises phosphoric acid, sulfuric acid, trifluoromethane sulfonic acid, difluoromethan diphosphoric acid, difluoromethane disulfonic acid, trifluoroacetic acid, or a combination

Art Unit: 1745

thereof (Ohlsen's claim 19). The liquid oxidant/electrolyte mixture includes oxygen, hydrogen peroxide, or a combination thereof [0022].

Ohlsen does not disclose a fluorinated hydrocarbon. However, Brokman teaches that major advantages can be obtained by supplying oxygen to an air cathode via an organic fluid having a high oxygen concentration rather than via a gaseous medium. Brokman teaches that perfluorocarbon compounds known to be oxygen carriers and releasing agents, thus serving as temporary substitutes for blood in severe cases of hemorrhage or ischemia. Thus, Brokman teaches of providing a hydrogen-oxygen fuel cell comprising comprising an air cathode in combination with an oxygen-rich electrolyte-immiscible organic fluid for supplying oxygen thereto Preferably, perfluorodecalin is used. (1:55-67, 2:30-35, 45-50, 3:15-20). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add perfluorodecalin to Ohlsen's fuel cell for the benefit of increasing the oxygen content of Ohlsen's liquid oxidant/electrolyte mixture. Ohlsen clearly teaches that perfluorodecalin is a result effective variable and it has been held by the courts that discovering an optimum value or workable ranges of a result-effective variable involves only routine skill in the art, and thus not novel. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). See MPEP 2144.05.

Ohlsen does not disclose a surfactant. Further, Zonyl® FS-62 teaches that perfluorohexylethylsulfonic acid and ammonium perfluorohexylethylsulfonate possess solubility in polar organic solvents, water and strong acids. It is a powerful wetting agent, which dramatically reduces surface tension, even at very low concentrations in

Art Unit: 1745

aqueous media. Further, this material is stable in harsh chemical environments, produces foam in aqueous and acidic systems, and show appreciable synergies in mixed surfactant systems. Due to the sulfonate end group, perfluorohexylethylsulfonic acid and ammonium perfluorohexylethylsulfonate is more effective in soft water applications. The relatively low pKa of the sulfonic acid allows it to be used in acidic media as well as in alkaline formulations. It is also highly recommended for the wetting or dispersion of fluorochemical-based powders and/or fluids. It is functional over a wide pH range. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use perfluorohexylethylsulfonic acid and ammonium perfluorohexylethylsulfonate for the benefit of reducing surface tension and using the surfactant in harsh, acidic environments. The amount of surfactant in the emulsion aids in the solubility of perfluorodecalin and it has been held by the courts that discovering an optimum value or workable ranges of a result-effective variable involves only routine skill in the art, and thus not novel. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). See MPEP 2144.05.

The combination of Ohlsen (US 2004/0058217) in view of Brokman (US 5185218), and DuPont Zonyl® FS-62 would necessarily possess a pH of at most 1 or at least 10. Further, the examiner notes that the disclosure provides no evidence of criticality with regard to the pH. A limitation merely with respect to pH will not support patentability unless such limitation is "critical".

Ohlsen's fuel cell is configured in which the anode and the cathode are separated by a channel contiguous with at least a portion of each electrode; such that

Art Unit: 1745

when a first liquid is in contact with the anode, a second liquid is contacted with the cathode, and the first and the second liquids flow through the channel, laminar flow is established in the first and the second liquids. (fig. 2) Further, the third laminar flow stream is positioned between the first liquid fuel/electrolyte mixture and a liquid oxidant/electrolyte and separate the anode and the cathode.

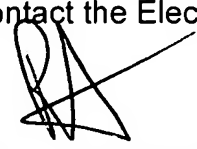
The combination of Ohlsen (US 2004/0058217) in view of Brokman (US 5185218), and DuPont Zonyl® FS-62 is proper because the applicant's field of endeavor not only appreciable towards fuel cells, but towards the emulsion of oxygen.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Lee whose telephone number is 571-272-8699. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**RAYMOND ALEJANDRO
PRIMARY EXAMINER**